

REMARKS

Claims 1-7, 19 and 21 are pending in the present application. Claims 1 and 19 were amended. Reconsideration of the claims is respectfully requested.

I. Formal Drawings

The Examiner has objected to the formal drawings filed on April 18, 2001 for containing new matter. This objection is respectfully traversed.

As to Figure 6B, the Office Action states:

The formal drawings contain Figure 6B which was not previously presented. The formal drawings are disapproved by the examiner. In answer to Applicant's arguments it is noted that because it is not clear what a straight feed-through connector is it cannot be clear how an auxiliary piece fitted to it would be structured.

Office Action dated October 14, 2003, page 2.

The Applicants respectfully submit that the specification as originally filed provides adequate support for the inclusion of Figure 6B. The specification, on pages 11-12, clearly describes the elements of flex circuit 601 illustrated in Figure 6B. Referring to the text for related Figure 6A, flex circuit 601 is held between the snap fit halves of 603 and 604 of the connector 600. Flex circuit 601 is attached to the connector pins during assembly, and a relief in the side of the connector 600 allows for the escape of flex circuit 601. As such, the text for Figure 6A on page 11 of the specification clearly describes the elements of flex circuit 601.

Related Figure 6B depicts a schematic diagram illustrating flex circuit 601. Referring to the text for Figure 6B on pages 11-12 of the specification, flex circuit 601 contains several openings 605 through which pins from connector 600 can pass and establish a connection between connector 600 and flex circuit 601. Flex circuit 601 can be connected to the pins by several methods, such as, for example, soldering, wire trap, or unidirectional locking time. Clearly, the flex circuit 601 of Figure 6B is the flex circuit 601 of Figure 6A, as evidenced by the Applicants' use of the same element number (601) and the virtually identical structures shown in Figures 6A and 6B.

Viewed in perspective, flex circuit 601 in both Figures 6A and 6B has a vertical component and a horizontal component. The LED indicators 602 are shown connected to the leftmost end of the horizontal component of flex circuit 601 in Figure 6A. The LED indicators 602 are not shown in Figure 6B, because the leftmost end of the horizontal component of flex circuit 601 in Figure 6B has been truncated (as evidenced by the conventional use of the wavy line at the leftmost edge). In both Figures 6A and 6B, flex circuit 601 includes a circular structure (e.g., opening) at the upper left corner of the vertical component, which is additional evidence that flex circuit 601 is the same flex circuit in both figures. Also, flex circuit 601 of Figure 6B contains openings 605 through which pins from connector 600 can pass. Openings 605 are located on the upper right edge of the vertical component of flex circuit 601 in Figure 6B, which is the same location on the vertical component of flex circuit 601 in Figure 6A. Thus, the pins from connector 600 in Figure 6A pass through openings 605 in Figure 6B. As such, flex circuit 601 of Figure 6B is flex circuit 601 of Figure 6A with LED's 602 and snap fit halves 603 and 604 of connector 600 removed. Therefore, Figure 6B does not include new matter, and the objection to the drawings should be withdrawn.

As mentioned above, the Examiner also stated with respect to this objection: "In answer to Applicant's arguments it is noted that because it is not clear what a straight feed-through connector is it cannot be clear how an auxiliary piece fitted to it would be structured." It is unclear to the Applicants what this statement means in regard to the objection to the drawings for allegedly including new matter. The Applicants' remarks in response to the Examiner's objection to the formal drawings in the Office Action dated May 8, 2003 do not mention a "straight feed-through connector." The Applicants respectfully suggest that the structure of a "straight feed-through connector" is not relevant to the issue of whether or not Figure 6B contains new matter, and request that the objection to the drawings be withdrawn.

II. 35 U.S.C. § 112, First Paragraph

The Examiner has rejected Claims 1-7, 19 and 21, under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. According to the Examiner, the claim(s) contain subject matter which was not described in the

specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. This rejection is respectfully traversed.

As to Claims 1-7, 19 and 21, the Office Action states:

It is still not clear what is meant by a "straight feed-through connector". Applicant has argued that the term "straight feed-through connector" is known to those of ordinary skill in the art, but a search of EAST using the phrase "straight feed-through connector" provides no hits. In other words no patent published since 1971 contains the phrase "straight feed-through connector". Applicant's example of a Molex interposer is inadequate since no details are given for a critical feature. What does a Molex interposer look like? No information is available in the disclosure. It is not clear how the connector to be used in the method of claim 1 is to be structured. It is not clear how the limitations of claims 2-4 would be implemented.

Office Action dated October 14, 2003, page 2.

The Applicants respectfully submit that those of ordinary skill in the art know the term "feed-through connector," and a "straight feed-through connector" is generally known in the art as a common variant of a "feed-through connector." For example, it is known to those of ordinary skill in the art that a "feed-through connector" can be straight, curved, angular (e.g., 45 degree, 90 degree), etc. In other words, the adjective "straight" describes a definite structural feature of a "feed-through connector" that is known to one of ordinary skill in the art. As such, the Applicants respectfully suggest that the Examiner perform another search of EAST using the phrase "feed-through connector."

In any event, by this response, Claims 1 and 19 have been amended to recite the feature of a "feed-through connector" in order to better define the present invention. In this regard, it is not necessary for the Applicants to define the term or the structure of a "feed-through connector" when the device is known to those of ordinary skill in the art.

Additionally, the invention of Claim 1 recites the connection of electronic components by using a feed-through connector having connecting pins, and attaching one end of a flexible circuit to the connecting pins of the feed-through connector. The specification clearly describes the use of connector pins to establish a connection with a

flex circuit via openings in the flex circuit (see pages 11 and 12 of the present specification). Furthermore, Figure 7 illustrates how a connector pin may be used to connect to a flex circuit using locking lines. Consequently, it should be clear to one of ordinary skill in the art how to attach one end of a flexible circuit to the connecting pins of the feed-through connector.

Therefore, the Applicants respectfully submit that the specification provides an adequate description of the subject matter of Claims 1-7, 19 and 21 to enable one of ordinary skill in the art to make and/or use the present invention. Thus, the rejection of Claims 1-7, 19 and 21, under 35 U.S.C. § 112, first paragraph, has been overcome.

III. 35 U.S.C. § 112, Second Paragraph

The Examiner has rejected Claims 1-7, 19 and 21, under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. This rejection is respectfully traversed.

As to Claims 1-7, 19 and 21, the Office Action states: "It is not clear what all the claimed steps are because it is not clear what all the elements used to perform the steps are."

The Applicants respectfully submit that the alleged indefinite elements recited in the claims have been addressed above in the Applicants' response to the rejection under 35 U.S.C. § 112, first paragraph. For at least those reasons, none of the features recited in Claims 1-7, 19 and 21 are indefinite. Therefore, the rejection of Claims 1-7, 19 and 21, under 35 U.S.C. § 112, second paragraph, has been overcome.

IV. 35 U.S.C. § 102, Anticipation

The Examiner has rejected Claims 1-3, 6, 7, 19 and 21, under 35 U.S.C. § 102(b), as being anticipated by U.S. Patent No. 4,676,564 to Mitchell, Jr. ("*Mitchell*"). This rejection is respectfully traversed.

As to independent Claim 1, the Office Action states:

The apparatus of Mitchell, Jr. includes a flexible circuit 30 (see Figure 1) intended to have the pins 24 of a module 20 (see Figure 3) pass through locking lines formed

by contacts 35. The pins and the casing of the module 20 are considered a straight feed-through connector. The module 20, as all skilled in the art know, would contain a chip or chips connected by very small wires to pins 24. Looking at Figure 2 the portion of the flexible circuit that contains terminals 34i is considered one end of the flexible circuit and the portion that contains terminals 34e the opposite end of the circuit. The apparatus of Mitchell, Jr. is intended to be used for maintenance tests under operating conditions. See column 4, lines 46 to 52 of Mitchell, Jr. Therefore in use the method of using the apparatus of Mitchell, Jr. in sampling data signals would be to connect the chip or chips using the module 20 and the pins 24 to a printed circuit board. The module and the pins form a straight feed-through connector. One end of the flexible circuit 30, that which contains the terminals 34i, is attached to the pins and the opposite end is connected to test apparatus via probes which inherently has a display. If the results of the test cannot be displayed the test would be useless.

Office Action dated October 14, 2003, pages 3 and 4.

A prior art reference anticipates the claimed invention under 35 U.S.C. § 102 only if every element of a claimed invention is identically shown in that single reference, arranged as they are in the claims. *In re Bond*, 910 F.2d 831, 832, 15 U.S.P.Q.2d 1566, 1567 (Fed. Cir. 1990). All limitations of the claimed invention must be considered when determining patentability. *In re Lowry*, 32 F.3d 1579, 1582, 32 U.S.P.Q.2d 1031, 1034 (Fed. Cir. 1994). Anticipation focuses on whether a claim reads on the product or process a prior art reference discloses, not on what the reference broadly teaches. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 218 U.S.P.Q. 781 (Fed. Cir. 1983).

In this particular case, each and every feature of the presently claimed invention is not shown within *Mitchell* arranged as in the rejected claims. Claim 1 reads as follows:

1. A method for sampling data signals between electronic components, comprising:
 - connecting the electronic components by using a feed-through connector wherein the feed-through connector has connecting pins;
 - attaching one end of a flexible circuit to the connecting pins of the feed-through connector; and
 - attaching an opposite end of the flexible circuit to a display.

Specifically, *Mitchell* does not show or disclose a feed-through connector, connecting electronic components by using a feed-through connector, attaching one end of a flexible circuit to the connecting pins of the feed-through connector, and attaching an opposite end of the flexible circuit to a display, as in Claim 1.

In the cited text of *Mitchell*, the Examiner points to Figures 1-3 of *Mitchell* as teaching a straight feed-through connector feature. According to the Examiner, the pins and casing of the pin grid array "module" 20 in Figures 1 and 3 "are considered a straight feed-through connector." Also, according to the Examiner:

The module 20, as all skilled in the art know, would contain a chip or chips connected by very small wires to pins 24... [I]n use the method of using the apparatus of *Mitchell, Jr.* in sampling data signals would be to connect the chip or chips using the [pin grid array] module 20 and the pins 24 to a printed circuit board. The module and the pins form a straight feed-through connector. One end of the flexible circuit 30, that which contains the terminals 34i, is attached to the pins and the opposite end is connected to test apparatus via probes which inherently has a display. If the results of the test cannot be displayed the test would be useless.

Office action dated October 14, 2003, page 3.

The Examiner has incorrectly characterized the pin grid array 20 and its pins 24 in *Mitchell* as being a straight feed-through connector. The pin grid array 20 and pins 24 of *Mitchell* merely form a plug-in "module" to be mounted on a printed circuit board, and not a feed-through connector as in Claim 1. The pin grid array "module" 20 is mounted on the printed circuit board by inserting the pins 24 into a socket on the printed circuit board. For example, according to the description in *Mitchell*:

One of the major uses of printed circuit boards is for the **mounting** of pin grid array units which provide an integrated circuit having multitudinous connections which are output through connector pins on the underside. These pin grid arrays are **mounted via the underside pins onto a printed circuit board and soldered (or inserted in sockets placed in the circuit board)**... Referring to FIG. 1, there is seen a typical circuit board 10 in which various areas of real estate have been allocated for the **insertion of pin grid**

arrays such as pin grid array 20. In typical usage, the pin grid array 20 will often have a heat sink device 22 to permit heat dissipation for the array unit... In any case the heat sink will preclude the use of a top surfaced "scratch pad".

As further seen in FIG. 1, the printed circuit board 10 will have sockets 12 soldered to the board as shown, in order to receive the pins 24 which can be inserted into the apertures of the sockets 12. [Emphasis added.]

Mitchell, column 1, lines 23-30, column 2, lines 50-55, 57-62.

Clearly, the pin grid arrays in *Mitchell* are plug-in "modules". The underside pins of the pin grid arrays in *Mitchell* are inserted into the sockets in the printed circuit board. In fact, there are no "upper side" pins in the pin grid arrays of *Mitchell*, because *Mitchell* shows the top surfaces of those pin grid arrays as being terminated in heat sink devices. Therefore, having pins on only one side, the pin grid arrays and underside pins of *Mitchell* do not provide a "feed-through connector" feature, as in Claim 1. Adding a wire from a pin 24 to an integrated circuit chip, as posited by the Examiner, merely forms a connection between the integrated circuit chip and the pin 24. A wire between the chip and the pin 24 does not form a "feed-through connector." Thus, each and every feature of Claim 1 is not shown by *Mitchell* as arranged in Claim 1.

Furthermore, *Mitchell* does not show or disclose connecting electronic components by using a feed-through connector, attaching one end of a flexible circuit to the connecting pins of a feed-through connector, and attaching an opposite end of the flexible circuit to a display, as in Claim 1. As such, Figures 1-3 of *Mitchell* only disclose mounting an access device unit 30 underneath the pin grid array 20 so that the access device unit 30 rests between the circuit board land area and the pin grid array. Each of the pins 24 of the pin grid array 20 can penetrate through the interior contact pads 34i of the access device unit 30 and then penetrate the apertures of the sockets 12 to make contact with the underside of the printed circuit board. Albeit, *Mitchell* describes the access device unit 30 as a flexible film circuit, with exterior contact pads 34e that are accessible for electrical probes. However, *Mitchell* does not show or disclose attaching the exterior contact pads to a display. It is only the Examiner's statement that the opposite end of the flexible circuit 30 is connected to test apparatus via probes which inherently has a display, which provides the alleged feature of Claim 1 that *Mitchell*

clearly lacks. Again, each and every feature of Claim 1 is not shown by *Mitchell* as arranged in Claim 1. Therefore, when all of the claim features are considered, *Mitchell* does not teach each and every feature of the presently claimed invention.

Additionally, *Mitchell* actually teaches away from the presently claimed invention, because *Mitchell* teaches the use of a pin grid array with underside pins that are inserted or plugged into a printed circuit board through contact pads in a flexible circuit, as opposed to the use of a feed-through connector for connecting electronic components, wherein the feed-through connector has connecting pins, with one end of a flexible circuit attached to the connecting pins of the feed-through connector, and the opposite end of the flexible circuit attached to a display, as recited in Claim 1. Therefore, in addition to not teaching the features of the presently claimed invention, *Mitchell* actually teaches one of ordinary skill in the art not to implement the features claimed in the present invention.

Since Claims 2-3, 6, 7, 19 and 21 depend from Claim 1, the same distinctions between *Mitchell* and the claimed invention in Claim 1 also exist for these dependent claims. Additionally, Claims 2-3, 6, 7, 19 and 21 claim other additional combinations of features not suggested by *Mitchell*. Consequently, it is respectfully urged that the rejection of Claims 2-3, 6, 7, 19 and 21 has been overcome.

Therefore, the rejection of Claims 1-3, 6, 7, 19 and 21, under 35 U.S.C. § 102(b), has been overcome.

Furthermore, *Mitchell* does not teach, suggest, or give any incentive to make the needed changes to reach the presently claimed invention. *Mitchell* actually teaches away from the presently claimed invention because it teaches the use of a pin grid array with underside pins that are inserted or plugged into a printed circuit board, as opposed to the use of a feed-through connector for connecting electronic components, wherein the feed-through connector has connecting pins, with one end of a flexible circuit attached to the connecting pins of the feed-through connector, and the opposite end of the flexible circuit attached to a display, as in the presently claimed invention. Absent the Examiner pointing out some teaching or incentive to implement *Mitchell* and a feed-through connector, one of ordinary skill in the art would not be led to modify *Mitchell* to reach the present invention when the reference is examined as a whole. Absent some teaching,

suggestion, or incentive to modify *Mitchell* in this manner, the presently claimed invention can be reached only through an improper use of hindsight using the Applicants' disclosure as a template to make the necessary changes to reach the claimed invention.

V. 35 U.S.C. § 103, Obviousness

The Examiner has rejected Claim 4, under 35 U.S.C. § 103(a), as being unpatentable over *Mitchell* in view of U.S. Patent No. 4,921,439 to Bofill et al. ("*Bofill*"). This rejection is respectfully traversed.

Claim 4 is patentable over *Mitchell* in view of *Bofill*, because independent Claim 1 from which Claim 4 depends is patentable. *Mitchell* does not disclose, show or suggest connecting electronic components by using a feed-through connector, attaching one end of a flexible circuit to the connecting pins of a feed-through connector, and attaching an opposite end of the flexible circuit to a display, as in Claim 1. As explained above, *Mitchell* actually teaches away from these features as shown in the sections of *Mitchell* cited by the Examiner. Therefore, the rejection of dependent Claim 4, under 35 U.S.C. § 103(a), has been overcome.

Additionally, the Examiner has rejected Claim 5, under 35 U.S.C. § 103(a), as being unpatentable over *Mitchell* in view of the alleged prior art of Figure 4 in the present application. This rejection is respectfully traversed.

Claim 5 is patentable over *Mitchell* in view of Figure 4, because independent Claim 1 from which Claim 5 depends is patentable. Again, *Mitchell* does not disclose, show or suggest connecting electronic components by using a feed-through connector, attaching one end of a flexible circuit to the connecting pins of a feed-through connector, and attaching an opposite end of the flexible circuit to a display, as in Claim 1. As explained above, *Mitchell* actually teaches away from these features as shown in the sections of *Mitchell* cited by the Examiner. Therefore, the rejection of dependent Claim 5, under 35 U.S.C. § 103(a), has been overcome.

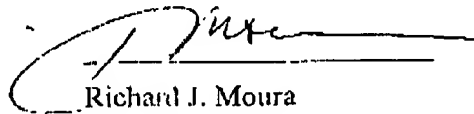
VI. Conclusion

It is respectfully urged that the subject application is patentable over *Mitchell* and *Bofill* and is now in condition for allowance.

The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

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Respectfully submitted,



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